

Application No.: 10/691,520**Docket No.: 4006-271****AMENDMENTS TO THE CLAIMS:**

The pending claims are listed as follows:

1. (Currently amended) A method of manufacturing an abrasive article, the method comprising:
 - placing abrasive particles on a substrate;
 - ~~forming a base layer to affix the abrasive particles on the substrate by plating, sintering, or brazing;~~
 - forming a base layer to cover the abrasive particles entirely by plating, sintering, or brazing to affix the abrasive particles on the substrate; and
 - removing an upper portion of the base layer by wet etching or grinding;
 - forming a binding layer on the base layer by plating, sintering, or brazing;
 - removing the substrate by wet etching or grinding; and
 - removing the base layer by wet etching or grinding.
2. (Original) The method of claim 1, wherein the abrasive particles are made of diamond, boron nitride, or aluminum oxide.
3. (Cancelled)
4. (Original) The method of claim 1, wherein the base layer and the binding layer are each made of a same material or different materials, the material comprising

Application No.: 10/691,520**Docket No.: 4006-271**

polymer, metal, metal compound or carbide.

5. (Original) The method of claim 4, wherein materials of the base layer and the binding layer are iron, nickel, copper, zinc, tin or an alloy thereof.

6. (Original) The method of claim 1, wherein when the abrasive particles are made of diamond, the binding layer is made of chromium, cobalt, tungsten, titanium, zinc, iron, manganese or an alloy thereof.

7. (Original) The method of claim 1, wherein when the abrasive particles are made of boron nitride or aluminum oxide, the binding layer is made of aluminum, boron, carbon or silicon.

8-9. (Cancelled)

10. (Currently amended) The method of claim 1, further comprising roughening surfaces of the abrasive particles to increase adhesion between the abrasive particles and the [[base]] binding layer between the steps of forming the base layer and forming the binding layer.

11. (Previously presented) The method of claim 10, wherein the surfaces of the abrasive particles are roughened by oxidation, etching or grinding.

Application No.: 10/691,520**Docket No.: 4006-271**

12. (Currently amended) The method of claim 1, further comprising performing a heating process to form chemical bonds between the binding layer and the abrasive particles between the steps of forming the binding layer and removing the ~~substrate~~base layer.

13. (Previously presented) The method of claim 1, further comprising forming a protective layer on the exposed binding layer and the exposed abrasive particles by vapor deposition or spray-on after removing the base layer.

14. (Previously presented) The method of claim 13, wherein the protective layer is made of metal, metal compound, polymer or a diamond-like carbon.

15. (Currently amended) A method of manufacturing an abrasive article, the method comprising:

placing abrasive particles on a substrate;

forming a base layer to cover the abrasive particles entirely by plating, sintering, or brazing to affix the abrasive particles on the substrate; and

removing an upper portion of the base layer by wet etching or grinding; forming
~~a base layer to affix the abrasive particles on the substrate by plating, sintering, or brazing;~~

filling gaps between the abrasive particles with corrosion-resistant particles ;

forming a fixation layer to affix the corrosion-resistant particles in the gaps by plating, sintering, or brazing;

Application No.: 10/691,520**Docket No.: 4006-271**

forming a binding layer on the fixation layer by plating, sintering, or brazing;
removing the substrate by wet etching or grinding;
removing the base layer by wet etching or grinding; and
removing the fixation layer by wet etching or grinding.

16. (Cancelled)

17. (Original) The method of claim 15, wherein the base layer, the fixation layer and the binding layer are each made of a same material or different materials, the material comprising polymer, metal, metal compound, or carbide.

18. (Original) The method of claim 17, wherein the base layer, the fixation layer and the binding layer are made of iron, nickel, copper, zinc, tin or an alloy thereof.

19. (Original) The method of claim 15, wherein when the abrasive particles are made of diamond, the binding layer is made chromium, cobalt, tungsten, titanium, zinc, iron, manganese or an alloy thereof.

20. (Original) The method of claim 15, wherein when the abrasive particles are made of boron nitride or aluminum oxide, the binding layer is made of aluminum, boron, carbon or silicon.

21. (Original) The method of claim 15, wherein the corrosion-resistant particles

Application No.: 10/691,520**Docket No.: 4006-271**

are made of diamond, ceramic, polymer, tungsten carbide or boron nitride.

22-23. (Cancelled)

24. (Currently amended) The method of claim 15, further comprising roughening surfaces of the abrasive particles and the corrosion-resistant particles to increase adhesion of the abrasive particles and the corrosion-resistant particles with the [[base]] binding layer between the steps of forming the base layer and forming the binding layer.

25. (Original) The method of claim 24, wherein the surfaces of the abrasive particles and the corrosion-resistant particles are roughened by oxidation, etching or grinding.

26. (Currently amended) The method of claim 15, further comprising performing a heating process to cause the binding layer to react with the surfaces of the abrasive particles and the corrosion-resistant particles between the steps of forming the binding layer and removing the ~~substrate~~base layer.

27. (Previously presented) The method of claim 15, further comprising forming a protective layer on the exposed binding layer, the exposed abrasive particles and the corrosion-resistant particles by vapor deposition or spray-on after removing the base layer.

Application No.: 10/691,520**Docket No.: 4006-271**

28. (Previously presented) The method of claim 27, wherein the protective layer is made of metal, metal compound, polymer or a diamond-like carbon.

29. (Previously presented) A method of manufacturing an abrasive article, the method comprising:

forming a first base layer with padding particles on a substrate by plating;

placing abrasive particles on the first base layer;

forming a second base layer to affix the abrasive particles on the first base layer by plating, sintering, or brazing;

forming a binding layer on the second base layer by plating, sintering, or brazing;

removing the substrate by wet etching or grinding; and

removing the first base layer, the padding particles, and the second base layer by wet etching or grinding.

30. (Previously presented) The method of claim 29, wherein between the steps of forming the second base layer and forming the binding layer, the method further comprises:

filling gaps between the abrasive particles with corrosion-resistant particles;

and

forming a fixation layer to affix the corrosion-resistant particles in the gaps by plating, sintering, or brazing.

31. (Previously presented) The method of claim 30, further comprising

Application No.: 10/691,520**Docket No.: 4006-271**

removing the fixation layer by wet etching or grinding after removing the first base layer, the padding particles, and the second base layer.

32. (Original) The method of claim 31, wherein the padding particles are made of a material the same as the abrasive particles.

33. (Cancelled)

34. (Previously presented) The method of claim 29, wherein the padding particles are suspended in a plating solution.

35. (Original) The method of claim 31, wherein the first base layer, the second base layer, the fixation layer and the binding layer are each made of a same material or different materials, the material comprising polymer, metal, metal compound or carbide.

36. (Original) The method of claim 35, wherein the first base layer, the second base layer, the fixation layer and the binding layer are made of iron, nickel, copper, zinc, tin or an alloy thereof.

37. (Original) The method of claim 31, wherein when the abrasive particles are made of diamond, the binding layer is made of chromium, cobalt, tungsten, titanium, zinc, iron, manganese or an alloy thereof.

38. (Original) The method of claim 31, wherein when the abrasive particles are

Application No.: 10/691,520Docket No.: 4006-271

made of boron nitride or aluminum oxide, the binding layer is made of aluminum, boron, carbon or silicon.

39. (Original) The method of claim 31, wherein the corrosion-resistant particles are made of diamond, ceramic, polymer, tungsten carbide or boron nitride.

40. (Cancelled)

41. (Previously presented) The method of claim 31, wherein the step of forming the second base layer comprises:

forming the second base layer to cover the abrasive particles entirely by plating, sintering, or brazing; and

removing an upper portion of the second base layer by wet etching or grinding.

42. (Currently amended) The method of claim 31, further comprising roughening surfaces of the abrasive particles and the corrosion-resistant particles to increase adhesion of the abrasive particles and the corrosion-resistant particles with the binding layer between the steps of forming the second base layer and forming the binding layer.

43. (Original) The method of claim 42, wherein the surfaces of the abrasive particles and the corrosion-resistant particles are roughened by oxidation, etching or

Application No.: 10/691,520**Docket No.: 4006-271**

grinding.

44. (Currently amended) The method of claim 31, further comprising performing a heating process to react the binding layer with surfaces of the abrasive particles and the corrosion-resistant particles between the steps of forming the binding layer and removing the ~~substrate~~base layer.

45. (Currently amended) The method of claim 31, further comprising forming a protective layer on the exposed binding layer, the exposed abrasive particles and the corrosion-resistant particles by vapor deposition or spray-on after removing the ~~fixation layers~~substrate and the base layer.

46. (Previously presented) The method of claim 45, wherein the protective layer is made of metal, metal compound, polymer or a diamond-like carbon.

47. (Currently amended) A method of manufacturing an abrasive article, the method comprising:

placing a mesh on a substrate;

filling openings of the mesh with abrasive particles;

forming a base layer to cover the abrasive particles entirely by plating,

sintering, or brazing to affix the abrasive particles on the substrate; and

removing an upper portion of the base layer by wet etching or grinding; forming

Application No.: 10/691,520Docket No.: 4006-271

~~a base layer to affix the abrasive particles on the substrate by plating, sintering, or brazing;~~

forming a binding layer on the base layer by plating, sintering, or brazing;

removing the substrate by wet etching or grinding; and

removing the base layer by wet etching or grinding and removing the mesh.

48. (Previously presented) The method of claim 47, wherein between the steps of forming the base layer and forming the binding layer, the method further comprises:

filling gaps between the abrasive particles with corrosion-resistant particles;

and

forming a fixation layer to affix the corrosion-resistant particles in the gaps by plating, sintering, or brazing.

49. (Previously presented) The method of claim 48, further comprising removing the fixation layer by wet etching or grinding after removing the base layer and the mesh.

50. (Original) The method of claim 49, wherein the openings in the mesh are smaller than the abrasive particles to allow tips of the abrasive particles to point down at the substrate.

51. (Cancelled)

Application No.: 10/691,520**Docket No.: 4006-271**

52. (Original) The method of claim 49, wherein the base layer, the fixation layer and the binding layer are each made of a same material or different materials, the material comprising polymer, metal, metal compound or carbide.

53. (Original) The method of claim 52, wherein the base layer, the fixation layer and the binding layer are made of iron, nickel, copper, zinc, tin or an alloy thereof.

54. (Original) The method of claim 49, wherein when the abrasive particles are made of diamond, the binding layer is made of chromium, cobalt, tungsten, titanium, zinc, iron, manganese or an alloy thereof.

55. (Original) The method of claim 49, wherein when the abrasive particles are made of boron nitride or aluminum oxide, the binding layer is made of aluminum, boron, carbon or silicon.

56. (Original) The method of claim 49, wherein the corrosion-resistant particles are made of diamond, ceramic, polymer, tungsten carbide or boron nitride.

57-58. (Cancelled)

59. (Previously presented) The method of claim 49, wherein the step of forming the base layer comprises:

forming the base layer to cover the abrasive particles entirely by plating, sintering, or brazing; and

Application No.: 10/691,520**Docket No.: 4006-271**

removing an upper portion of the base layer by wet etching or grinding.

60. (Currently amended) The method of claim 49, further comprising roughening surfaces of the abrasive particles and the corrosion-resistant particles to increase adhesion of the abrasive particles and the corrosion-resistant particles with the [[base]] binding layer between the steps of forming the base layer and forming the binding layer.

61. (Original) The method of claim 60, wherein the surfaces of the abrasive particles and the corrosion-resistant particles are roughened by oxidation, etching or grinding.

62. (Currently amended) The method of claim 49, further comprising performing a heating process to react the binding layer with surfaces of the abrasive particles and the corrosion-resistant particles between the steps of forming the binding layer and removing the ~~substrate~~base layer.

63. (Previously presented) The method of claim 49, further comprising forming a protective layer on exposed binding layer, exposed abrasive particles and the corrosion-resistant particles by vapor deposition or spray-on after removing the base layer.

64. (Previously presented) The method of claim 63, wherein the protective layer

Application No.: 10/691,520

Docket No.: 4006-271

is made of metal, metal compound, polymer or a diamond-like carbon.

65-71. (cancelled)